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Title Page

Universal SARS-CoV-2 testing on admission to Labor and Delivery: Low prevalence among asymptomatic obstetric patients

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Background

During the COVID-19 pandemic surge in New York, several hospitals in New York City and Long Island began testing all women presenting to Labor and Delivery for SARS-CoV-2. They found that 14% of asymptomatic women tested positive.^{1,2} Unidentified, these asymptomatic women were at risk of infecting their newborns following birth, hospital staff, as well as other patients. It is unclear, however, if the high rate of asymptomatic infections in New York is a reflection of a particularly high prevalence of SARS-CoV-2 during that time period in New York or a more generalizable phenomenon applicable to other high prevalence areas. Boston followed New York as another high prevalence metropolitan area (1,628 cases per 100,000 residents vs 2,046 in New York City as of May 1, 2020). We therefore report on the prevalence of asymptomatic SARS-CoV-2 in women presenting to labor and delivery in Boston, another U.S. high prevalence community.

Methods

Two academic and two community hospitals affiliated with Mass General Brigham Health began universally testing all women admitted to Labor and Delivery for SARS-CoV-2 using RT-PCR 53 (nasopharyngeal swab) on April 18, 2020. Prior to this intervention, multiple infection control strategies in addition to those routine in our facilities had been implemented in response to the COVID-19 pandemic including: 1) symptom and exposure screening of all patients with implementation of immediate isolation if symptom screen positive and testing for SARS-Cov-2, 2) universal masking of employees, patients, and visitors on facility premises³, 3) daily employee symptom attestation with exclusion from work and referral for testing if symptom screen positive; and 4) deferral of all non-essential in-person visits and elective procedures.

Demographic and SARS-CoV-2 test results were, abstracted from the electronic medical record for all women admitted to Labor and Delivery between April 18, 2020 and May 5, 2020. All records for women

with positive tests on admission were independently reviewed by two physicians (ITG and DK) to confirm symptom status based on established symptom screening including fever (subjective or documented), new cough, shortness of breath, sore throat, muscle aches, new rhinorrhea, or new anosmia). The descriptive data are presented as frequencies.

Results

The four major hospitals affiliated with Mass General Brigham Health provide maternity care to approximately 14,750 women/year. Over 18 days of universal testing on Labor and Delivery units, 763 women were admitted and 757 (99.2%) were tested. Of those, 139 had symptoms possibly consistent with COVID-19. Of symptomatic women, 11/139 (7.9%) tested positive. Amongst asymptomatic women, 9/618 (1.5%) tested positive (Figure 1). Thus, 9 of 20 patients positive for SARS-CoV-2 at admission (45%) had no symptoms of COVID-19 at presentation. The percentage of asymptomatic women who tested positive varied by hospital: 2.7% and 1.5% in the two academic hospitals, 1.8% and 0.6% in the two community hospitals. Across the four hospitals, none of the positive asymptomatic women developed COVID-19 symptoms during the delivery hospitalization and all 9 newborns tested negative for SARS-CoV-2.

Discussion

In a large healthcare system in metropolitan Boston, we identified a low prevalence of SARS CoV-2 infection among asymptomatic pregnant women presenting for admission to Labor and Delivery. The incidence of asymptomatic infection amongst women admitted to Labor and Delivery in greater Boston was substantially lower than that of New York City despite similar case counts per capita. Notably, the 1-2% incidence of asymptomatic infection in our population more closely mirrors asymptomatic infection rates in other areas.^{4,5} Several theories may explain the lower prevalence of asymptomatic infection in Boston compared to New York City: 1) we began testing more than 30 days after physical distancing orders were placed by the state and hence were sampling at a time with declining community transmission

, 2) the overall population density of greater Boston is lower than New York City perhaps leading to less community-based transmission, and 3) some New York hospitals transiently stopped or considered stopping birth partners from attending deliveries which could have led to some women underreporting symptoms.

Universal testing of women presenting for labor and delivery, as one element of a multipronged approach to reducing the risk of SARS-CoV-2 transmission in healthcare facilities, is likely to remain a core strategy for the foreseeable future to inform both clinical care and infection control operations. Universal testing in this specific patient population is an especially important public health priority given the implications of SARS-CoV-2 on maternal and newborn care at the time of birth and during the postpartum and neonatal period. In addition, testing the asymptomatic obstetric population provides a window into the community prevalence of infection which in turn can inform the timing and effect of when, where, and how to enhance versus relax social distancing measures. Assessing the community-based Covid-19 prevalence rates must take into account the possibility of local clustering of disease where a community lies within the pandemic curve and the status of contemporaneous mitigation strategies. These data may, therefore, guide decision making about moving between mitigation versus containment measures and thoughtfully resuming both healthcare and non-healthcare operations.

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Figure 1: All women tested for SARS CoV-2 on Labor and Delivery

